Generally Accepted Agricultural and Management Practices

2008 Revisions' Overview

TABLE OF CONTENTS

Manure Management and Utilization

~~CONTAMINATED~~ RUNOFF CONTROL AND WASTEWATER MANAGEMENT
"CONTAMINATED" removed throughout

Page 6
Removal of text listed under Quick Reference TO THE GAAMPs for Manure Management and Utilization, V. Manure Application to Land, #29, replaced with:

29. All fields used for the production of agricultural crops should have soils sampled and tested on a regular basis to determine where manure nutrients can best be utilized.

Page 9
Additional text under RUNOFF CONTROL AND WASTEWATER MANAGEMENT, Land Application of Runoff, #6 (with listed conditions):

6. ……..On fields testing over 150 ppm P (300 lbP/acre) soil test Bray P1, there may be instances where on-farm generated wastewater, ≤1% solids, can be utilized if applied at rates that supply 75% or less of the annual phosphorus removal for the current crop or next crop to be harvested.

In these instances, the following conditions must be met:

a) annual sampling of the applied wastewater to determine its P content, so P_2O_5 loadings can be calculated;
b) soil P test levels must show a progressive decline over time;
c) no other phosphorus can be applied to the crop field from other sources;
d) when using irrigation as an application method, the GAAMPs for Irrigation Water Use must be followed to ensure that irrigation scheduling is used to meet and not exceed evapotranspiration needs of the crop/soil system to avoid excess wastewater disposal that would flush soluble phosphorus past the depth of crop rooting; and
e) tile drained fields must be monitored in accordance with GAAMP 36;

Manure continued

Page 20
Removal of current text listed under V. MANURE APPLICATION TO LAND, Soil Fertility Testing, #29, replaced with:

29. All fields used for the production of agricultural crops should have soils sampled and tested on a regular basis to determine where manure nutrients can best be utilized.

One goal of a well-managed manure application program is to utilize soil testing and fertilizer recommendations as a guide for applying manures. This will allow as much of the manure nutrients as possible to be used for supplying crop nutrient requirements. Any additional nutrients needed, can be provided by commercial fertilizers. Soil test results will change over time depending on fertilizer and manure additions, precipitation, runoff, leaching, soil erosion, and nutrient removal by crops. Therefore, soil testing should be done once every one to four years, with the frequency of soil sampling dependent on (a) how closely an individual wants to track soil nutrient changes, (b) the crop(s) grown, (c) cropping rotation, (d) soil texture, and (e) the approach used for sampling fields (see MSUE Bulletin E-4985; Warncke and Gehl, 2006 for more details)

Page 45
Removal of Dr. Bill Bickert and Ronda Wuycheck from Review Committee

Nutrient Utilization

Page 20
Additional text inserted VII LAND APPLICATION OF ORGANIC (BIOLOGICAL) MATERIALS AND BY-PRODUCT LIMING MATERIALS FOR CROP PRODUCTION, (within paragraph just prior to Composting Organic By-Products):

In addition to these residuals, the generation of new by-products is increasing in Michigan and the U.S. from crop-based bioenergy plants producing ethanol from corn and soydiesel blends from soybeans. Two primary by-products are dried distillers grains (DDGs), and wet distillers grains (WDGs). These by-products can be utilized as livestock feed, and MDEQ considers these organic by-products as food-processing residuals which are exempt from regulation as a solid waste and permit requirements, if these by-products are land applied at an agronomic rate consistent with the GAAMPs specified in Section VIII below.

All of the above ~~These~~…..

Nutrient continued

Page 22
Amended text under VIII LAND APPLICATION OF CONDITIONALLY-EXEMPTED ORGANIC BY-PRODUCTS, COMPOSTED ORGANIC BY-PRODUCTS, AND BY-PRODUCT LIMING MATERIALS, #23:

23. All fields to which by-products are applied should have soils ~~be soil~~ sampled ~~at least every one to four years~~ and ~~the soils~~ tested on a regular basis to determine where by-product nutrients or by-product lime can ~~be~~ best be utilized (see Section III, GAAMP #7).

Site Selection

TABLE OF CONTENTS
IV. – OFFSITE MANURE STORAGE FACILITIES, added (following sections assigned new numbering)

Page 3
Addition to definitions:

Adjacent – Any livestock production facility that is within 1,000 feet of a second livestock production facility and where the two facilities are under common ownership

Offsite Manure Storage Facility – A manure storage facility constructed at a site that is not adjacent to a livestock production facility.

Page 9
Addition of new section (with table), IV OFFSITE MANURE STORAGE FACILITIES

Table 6. Site Setbacks, Verification, and Notification – New or Expanding Operations

Storage Surface Area at Operational Volume Elevation, sq. ft.			**Property Line Setback, ft.**	**MDA Site Review and Verification Process**
Liquid Manure		Solid Manure		
Pond-type storage	Fabricated structure-type storage, i.e. reinforced concrete or steel			
≤4,200	≤2,000	≤26,000	250[1]	Upon Producer Request
>4,200	>2,000	>26,000	TBD[2]	Yes

[1]May be reduced based upon the Odor Management Plan.
[2]Distance to be determined based upon the Odor Management Plan.

Site Selection cont'd

Page 12

Additional paragraph under VI SITE REVIEW AND VERIFICATION PROCESS, Application for Siting Verification:

Upon submitting a site verification request to MDA, the responsible party must notify all non-farm residences identified for determining category (see Tables 2-5) and listed in the checklist under "Location of Non-Farm Residences", that the responsible party has made application for site verification with MDA.

Page 23

Correction to MAEAP contact information:

……go to: www.maeap.org or telephone (517) ~~241-4730~~ 373-9797.

Page 26

Removal of Dr. Bill Bickert, Ronda Wuycheck, and Dann Bolinger from Review Committee

Irrigation Water Use

Page 1

Amended text within 2nd bulleted item under INTRODUCTION:

Stewardship of the water quality means being careful to apply water at a rate that will infiltrate uniformly into the soil/substrate and be properly stored for crop use while not causing surface runoff or water movement below the root zone. ~~In container systems, it means recycling of runoff.~~

Page 2

Removal of #2 Monitor pumping plant efficiency, under II GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR IRRIGATION WATER USE, System Management (following items assigned new numbering).

Pages 3 and 4

Amended text under II GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR IRRIGATION WATER USE, System Management, #'s 3, 5, and-6 (previously #4, 6, and 7):

3.) Maintain the irrigation system in good working condition.
The objective …….~~sprinkler~~ component is in good operating condition and that the nozzles/emitters are not worn…….. Correct system pressure is essential for efficient operation. ~~Document in writing~~ Keep a record of when inspections are made.

5.) Ensure that ~~sprinkler nozzle packages are matched to~~ irrigation system output does not greatly exceed the infiltration rate of the soil or substrate.
The objective…into the soil or substrate…the infiltration rate of the soil or substrate…versus the infiltration of the soil or substrate …….Runoff can be managed to some extent by applying lower amounts per irrigation and/or, in the case of container production by increasing the gap between the container rim and the substrate surface. If runoff is noted, reduce the application amount and increase the frequency of irrigation. Check to see if there is a soil structure problem or if surface crusting is caused from too large of water droplets being applied.

Substrate added throughout GAAMP

~~Nursery~~ Irrigation systems used for container production… ~~Runoff collection systems should be designed to hold sufficient volumes of irrigation water runoff.~~

6.) Provide noise control for engine driven pumping units.
….provision should be made for ~~noise~~ sound control… to quiet the ~~noise~~ sound…to minimize ~~noise~~ sound...Sound travels easily over water bodies. Placement of engines should be considered carefully with respect to population density and sound transmission.

Page 4

Removal of, additional, and amended text under II GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR IRRIGATION WATER USE, Record Keeping, #'s 7-10 (formerly 8-13)

Record Keeping

Written documentation of an agricultural irrigator's water applications and management practices is an integral part of generally accepted agricultural and management practices.

7.) Records should conform to the requirements of the Michigan Water Use Reporting laws and regulations.

8.) Keep records on all system inspections and repairs that influence uniformity and leaks.

9.) Maintain records of regularly calibrated ~~fertigation and~~ chemigation equipment, if used~~, and maintain records~~.

10.) Keep records of the results each time the sprinkler system uniformity is evaluated.

Irrigation/Water cont'd

Page 5
Additional bulleted item and removal/corrected text under II GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR IRRIGATION WATER USE, Irrigation Scheduling, # 11 (formerly #14):

- Crop evapotranspiration at each stage of crop growth as determined by measured evaporation multiplied by the crop co-efficient. The crop co-efficient relates the actual evapotranspiration for a crop to the potential evapotranspiration. It depends on the crop development stage, is low during the initial stage, and reaches a peak at mid-season.

~~**Know the available soil water for each unit scheduled.**~~
11. Avoid applying irrigation water in excess of the quantity of water needed to replace the soil/substrate moisture deficit.

Page 7
Removal/corrected text under II GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR IRRIGATION WATER USE, Irrigation Scheduling, # 14 (formerly #16):

14. Use container capacity in scheduling irrigation for container grown ~~nursery~~ crops.

In container production systems...~~Peat and composted bark with finer particle sizes have higher moisture holding capacity than sands or other coarse textured substrates~~. A substrate is a mixture of different components to provide desired physical and chemical properties for proper plant growth. Increasing the percentage of fine particle substrate components, such as peat and sand, increase the moisture holding capacity of a substrate. However, addition of too many fine particle components can result in inadequate drainage.

Additional text, Irrigation Scheduling, #16 (formerly #18)

16. Measure, estimate, or use published evapotranspiration data and crop co-efficient (when available) to determine crop water use.

For some crops, you may wish to consult an irrigation specialist for assistance.

Pages 9-11

#18 (previously #25)

j. Crop cooling in special cases ~~with fruit crops~~…….

#19 (previously #20)
19. Choose irrigation application amounts that will avoid surface runoff under sprinkler irrigation. ~~In the case of container irrigation, runoff is to be managed through recycling or proper disposal systems.~~

The amount…….~~avoided by~~ minimized when irrigating soil by reduc~~ed~~ing application ~~amounts if the irrigation system application~~ rate~~s~~ to not exceed~~s~~ the ~~long-term~~ soil infiltration rate……..

Irrigation/Water cont'd
Pages 9-11 *cont'd*

#21 (previously #22)

21. When irrigation is used, split application of nitrogen fertilizer or use controlled release fertilizer.

Multiple applications will help to ensure that N is available when plants need it most and to minimize the amount that can be leached.

#24 removed completely.

Page 12 (Practical Considerations)
Paragraph text inserted between two existing paragraphs:

Monitor pumping plant efficiency. The objective of this practice is to maintain the design pressure and flow in the irrigation system while maximizing energy use efficiency. The distribution uniformity and the potential application efficiency of many irrigation systems are dependent on maintaining the design flow and pressure from the pumping plant. If the flow or pressure during operation are not as designed, something may be wrong with the pumping plant, the system may not be set up correctly, or is being operated incorrectly, or there may be worn nozzles.

II Background-Irrigation in Michigan

Percentages of 5.8, in second paragraph, replaced by 6.7

Page 14

Data (numbers) corrected within last three paragraphs of Irrigation in Michigan

The last available data as reported in the Federal Census of Agriculture for ~~1997~~ 2002 identified that ~~3,752~~ 4,413 Michigan farmers irrigated ~~393,485~~ 456,278 acres that year. This ~~number~~ represents an increase ~~decrease~~ in number of irrigators from ~~3,823~~ 4,123 ~~in 1992, but~~ and an increase in number of acres irrigated, up from ~~366,465~~ 407,071 acres as reported in ~~1992~~ 1997. These federal census numbers are reported in a five-year cycle and give a sense of present trends for the state.

In 200~~1~~ 4, of all farms irrigating 14 or more acres, St. Joseph County had the largest agriculture irrigation water use (MDEQ, 200~~1~~ 4). The next largest water withdrawal counties were Montcalm, Branch, ~~Ottawa and Van Buren~~ Kalamazoo and Cass. Together these five counties accounted for over ~~44~~ 32 percent of the total agricultural irrigated acres and ~~approximately 51~~ 32 percent of the total agriculture irrigation statewide. The primary source of water for agriculture irrigation in these counties was groundwater (~~72~~ 75 percent), with the remainder withdrawn from surface water sources. ~~Eleven~~ Eight counties reported no farms irrigating 14 acres or more.

The largest irrigated agriculture crop in Michigan during 200~~1~~ 4 was corn grown for grain and seed. This crop accounted for nearly 4~~3~~0 percent of the total irrigated acreage in the state and approximately 3~~1~~7 percent of the total water withdrawn. The next largest irrigated crop categories were soybeans, potatoes, vegetables, and greenhouse nursery crops (including sod). Together,

these categories accounted for ~~nearly 75~~ 84 percent of the total agricultural irrigated acreage in Michigan and ~~71~~ 85 percent of the irrigation water withdrawn.

Irrigation/Water cont'd

Page 15

Contact info amended:

Forms and information are available from the MDA's website at www.michigan/gov/mda or by contacting ~~Robert Pigg~~ Abigail Eaton at 517-241-3933 ~~517-373-6893~~.

Committee members added:

Tom Dudek
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Pesticide Utilization

APPENDIX II-REFERENCES ON AGENCY RECOMMENDATIONS

Page 21

Michigan State University pesticide use and pest control recommendations are contained in, but not limited to, the following publications and computer programs available from the MSU Educational Materials Distribution Center at http://www.emdc.msue.msu.edu/ or by calling 517-353-6740 or from the local MSU Extension office:

1. E-0154 Michigan Fruit Management Guide ~~Fruit spraying calendar for commercial growers~~

2. E-0312 Insect, disease, and nematode control for commercial vegetables

3. E-0434 Weed control guide for field crops
http://www.emdc.msue.msu.edu/Bulletin/PDF/E0434.pdf

4. E-0433 Weed control guide for vegetable crops
http://www.emdc.msue.msu.edu/Bulletin/PDF/E0433.pdf

5. E-1582 Insect, ~~and~~ nematode and disease control in Michigan field ~~and forage~~ crops.

6. E-2178 Chemical Control of Insects, Diseases, Weeds and Nematodes for Commercial Turf ~~Management~~ Managers
http://www.emdc.msue.msu.edu/Bulletin/PDF/E2178.pdf.

7. E-2676 Christmas Tree Pests Manual

8. NCR-251 Effective Herbicide Use on Christmas Tree Plantations

9. NCR 521 Control of Diseases on Commercial Greenhouse Crops

10. E-2696 Insect Control for the Greenhouse Industry – Poster
http://www.emdc.msue.msu.edu/Bulletin/PDF/E2696.pdf

MSU Extension Bulletins and other resources relevant to these Generally Accepted Agricultural and Management Practices can be obtained through the MSU ~~Learning Materials Catalogues and include~~ Educational Materials Distribution Center at this web site http://www.emdc.msue.msu.edu/ or from the local MSU Extension office.

1. ~~AM-95 Rinsing and Recycling Pesticide Containers~~
E-2182 Reading a Pesticide Label (English & Spanish)
http://www.emdc.msue.msu.edu/Bulletin/PDF/E2182.pdf

2. ~~E-2182 Reading a Pesticide Label (English & Spanish)~~
E-2575 Emergency Planning for the Farm
http://www.emdc.msue.msu.edu/Bulletin/PDF/E2575.pdf

3. ~~E-2575 SARA Title III, The Farmer's Responsibilities Under the Emergency Planning and Community Right-to-Know Law~~
E-2195 Pesticide applicator core training manual: certification, recertification, and registered technician training
http://www.pested.msu.edu/Resources/bulletins/E2195.html

4. ~~E-2195 Pesticide applicator core training manual: certification, recertification, and registered technician training~~
   E-2215 Using Pesticides Safely: A Guide for the Applicator

5. ~~E-2215 Using Pesticides Safely: A Guide for the Applicator~~
   E-2335 On-Farm Agrichemical Storage and Handling

Page 22

6. ~~E-2335 On-Farm Agrichemical Storage and Handling~~
   E-2784 Safe Transport, Storage, and Disposal of Pesticides

~~7. E-2784 Safe Transport, Storage and Disposal of Pesticides~~

Web site for MSUE Bulletins:

~~http://ceenet.msue.msu.edu/bulletin/ctlgmast.html~~ http://www.emdc.msue.msu.edu/

Committee member added:

Terri Novak
Michigan Department of Environmental Quality,
Agricultural Pollution Prevention Program

Animal Care

****No proposed changes

Cranberry Production

****No proposed changes